Region 7

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Fact Sheet

September 2016

LaJolla Spring Cave Complex - Meramec Caverns
Stanton, Missouri

INTRODUCTION

This fact sheet provides a brief overview of environmental testing and actions taken to address trichloroethylene vapors at the LaJolla Spring Cave Complex—Meramec Caverns near Stanton, Mo.

BACKGROUND

In March 2016, EPA Region 7 directed the potentially responsible party at a groundwater contamination Superfund site in Franklin County, Mo., to perform additional work to protect workers and visitors from potentially harmful exposures to trichloroethylene (TCE) vapors in nearby Meramec Caverns, a privately-owned tourist attraction near Stanton, Mo.

As a precautionary step, Meramec Caverns, also known as the LaJolla Springs Cave Complex, decided to cease cave tours in March 2016 while the potentially responsible party (TRW Automotive U.S., LLC) instituted controls to reduce TCE vapor levels. This work included:

--Installation of a set of air lock doors separating the upper level of the caverns from the lower level of the caverns;

--Installation of air scrubbers in the front portion of the cave including the gift shop/cafeteria; and

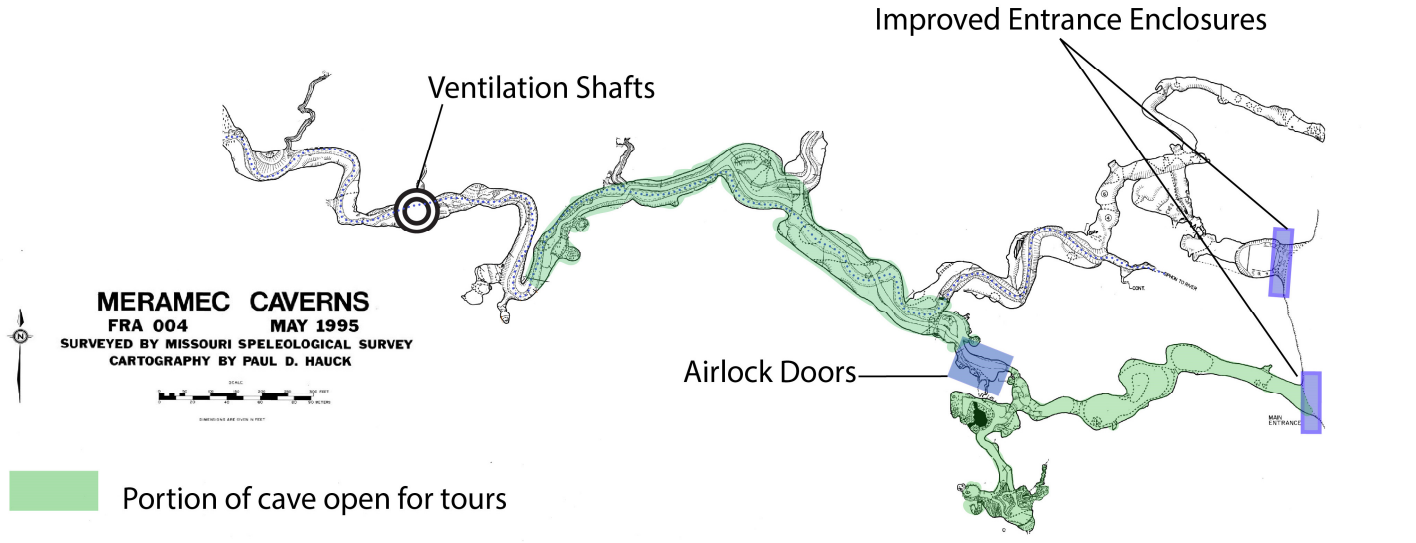
--Installation of two ventilation shafts to modify airflow in the back portion of the cave, while also redirecting the natural airflow away from the air lock door system.

As a result of this work, tours in the front of the cave resumed in June 2016, and the cave was fully reopened for tours in August 2016.

Since the controls were implemented, air testing has indicated that TCE vapors are below levels of health concern in the cave. EPA will continue to monitor air testing results periodically to verify that TCE concentrations remain below levels of health concern.

CONTAMINATION HISTORY

TCE vapors in the cave likely originate from two sources: the former TRW/Ramsey facility in



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downtown Sullivan and the Sullivan Landfill.

Both of these facilities are associated with the Oak Grove Village Well Superfund Site, which became part of EPA's National Priorities List in 2002. The former TRW/Ramsey facility environmental cleanup is managed by the Missouri Department of Natural Resources' (MDNR) Resource Conservation and Recovery Act (RCRA) program.

TCE contamination in the area's groundwater has been under investigation since 1986, when it was first detected by MDNR during routine sampling of a well. From October 2002 to January 2005, EPA and MDNR sampled air in Meramec Caverns. In 2003, samples showed TCE concentrations above levels of health concern. The cave owner took immediate steps to increase air flow within the cave, and samples collected in 2004 and 2005 showed those actions had decreased TCE concentrations to acceptable levels.

In 2011, EPA issued a toxicological evaluation for TCE based on the best available science at that time. This comprehensive evaluation, which underwent extensive external peer review, identified potential adverse health effects at lower concentrations of TCE than used in the past. The health effects that may occur following exposure to the lowest concentrations of TCE include heart malformations in the fetus and adverse effects on the immune system.

EPA, the Agency for Toxic Substances and Disease Registry (ATSDR), MDNR and the Missouri Department of Health and Senior Services (MDHSS) met with the cave owner in December 2014 to discuss a MDHSS health consultation released on Dec. 12, 2014, regarding TCE air concentrations in the cave air. The health consultation recommendations included the following: (1) Inform workers of elevated TCE concentrations in the cave air, and potential health risks associated with TCE inhalation; and (2) Implement permanent measures to mitigate vapor intrusion into the cave as soon as possible.

Since December 2014, EPA has conducted sampling and overseen the implementation of a number of actions intended to address the TCE levels in the cave. In February 2016, based on new data from late 2015, ATSDR recommended to EPA that TCE exposures to employees in Meramec Caverns be stopped until the levels were brought below levels of health concern.

At that time, EPA met with the cave's owner and multiple partner agencies, including MDHSS, as well as MDNR and ATSDR, to determine appropriate health-based benchmarks and specific actions that could be taken to protect the health of the cave's workers and visitors.

In March 2016, the owner of Meramec Caverns proactively closed the cave for tours while controls were being installed. After installation of these controls were completed, including the installation of air scrubbers and ventilation shafts, as well as other protective measures, the front portion of the cave reopened in June 2016. The back portion of the cave reopened for tours in August 2016.

GOING FORWARD

EPA is requiring the Potentially Responsible Party (TRW Automotive U.S., LLC) to perform routine air monitoring to verify that the controls in place are effectively maintaining TCE vapors below levels of health concern. EPA will continue to evaluate the data to determine the frequency of future tests.

If future tests indicate that TCE vapor concentrations are not being sustained below levels of health concern, EPA will recommend re-closure if necessary to protect human health.

ADDITIONAL INFORMATION

Technical documents, maps, and other site related information is available online at: https://semspub.epa.gov/src/collection/07/SC34273

Research, to date, and letters exchanged by the participating entities are also included in the above website.

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